

Express Mail No. EK968023843

We claim:

1 1. A method for protecting a material from ant infestation, comprising treating the material with
2 an effective amount of a compound selected from the group consisting of nootkatone, α -cedrene,
3 zizanol, and bicyclovetivenol, wherein the treated material repels or kills ants substantially more
4 than does an otherwise identical material that has not been treated with the compound.

1 2. A method as in Claim 1, wherein the ants are fire ants.

3. A method as in Claim 1, wherein the treated material repels ants.

4. A method as in Claim 1, wherein the treated material kills ants.

1 5. A method as in Claim 1, wherein the material is selected from the group consisting of soil,
2 synthetic polymers, diatomaceous earth, sand, and cellulose-containing materials.

1 6. A method as in Claim 1, wherein the compound is nootkatone.

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1 7. A method as in Claim 1, wherein the compound is α -cedrene.

1 8. A method as in Claim 1, wherein the compound is zizanol.

1 9. A method as in Claim 1, wherein the compound is bicyclovetivenol.

10. A method as in Claim 1, additionally comprising treating the material with one or more additional, different compounds selected from the group consisting of nootkatone, α -cedrene, zizanol, and bicyclovetivenol.

11. A protective barrier against ant infestation, said barrier comprising an effective amount of a compound selected from the group consisting of nootkatone, α -cedrene, zizanol, and bicyclovetivenol, and a substrate, wherein said barrier repels or kills ants substantially more than does an otherwise identical barrier that has not been treated with said compound.

1 12. A composition as in Claim 11, wherein the ants are fire ants.

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- 1 13. A composition as in Claim 11, wherein said substrate comprises a mulch.
- 1 14. A composition as in Claim 13, wherein said mulch comprises dried vetiver grass.
- 1 15. A composition as in Claim 13, wherein said mulch comprises cellulose-containing material.
- 1 16. A composition as in Claim 11, wherein said substrate comprises soil.
- 1 17. A composition as in Claim 11, wherein said substrate comprises diatomaceous earth.
- 1 18. A composition as in Claim 11, wherein said compound is nootkatone.

1 19. A composition as in Claim 18, wherein the concentration of nootkatone in said barrier is
2 between about 10 $\mu\text{g/g}$ and about 1000 $\mu\text{g/g}$.

1 20. A composition as in Claim 18, wherein the concentration of nootkatone in said barrier is
2 between about 10 $\mu\text{g/g}$ and about 200 $\mu\text{g/g}$.

21. A composition as in Claim 11, wherein said compound is zizanol.

22. A composition as in Claim 11, wherein said compound is bicyclovetivenol.

23. A composition as in Claim 11, wherein said compound is α -cedrene.

1 24. A composition as in Claim ~~11~~, additionally comprising treating said substrate with a one or
2 more additional, different compounds selected from the group consisting of nootkatone, α -cedrene,
3 zizanol and bicyclovetivenol.

1 31. A method as in Claim 25, wherein the compound is zizanol.

1 32. A method as in Claim 25, wherein the compound is bicyclovetivenol.

33. A method as in Claim 25, additionally comprising treating the material with one or more additional, different compounds selected from the group consisting of nootkatone, α -cedrene, zizanol, and bicyclovetivenol.

34. A protective barrier against tick infestation, said barrier comprising an effective amount of a compound selected from the group consisting of nootkatone, α -cedrene, zizanol, and bicyclovetivenol, and a substrate, wherein said barrier repels or kills ticks substantially more than does an otherwise identical barrier that has not been treated with said compound.

1 35. A composition as in Claim 34, wherein said substrate comprises a mulch.

1 36. A composition as in Claim 35, wherein said mulch comprises dried vetiver grass.

1 37. A composition as in Claim 35, wherein said mulch comprises cellulose-containing material.

38. A composition as in Claim 34, wherein said substrate comprises soil.

39. A composition as in Claim 34, wherein said substrate comprises diatomaceous earth.

1 40. A composition as in Claim 34, wherein said compound is nootkatone.

1 41. A composition as in Claim 40, wherein the concentration of nootkatone in said barrier is
2 between about 10 $\mu\text{g/g}$ and about 1000 $\mu\text{g/g}$.

1 42. A composition as in Claim 40, wherein the concentration of nootkatone in said barrier is
2 between about 10 $\mu\text{g/g}$ and about ~~200~~- $\mu\text{g/g}$.

1 43. A composition as in Claim 34, wherein said compound is zizanol.

1 44. A composition as in Claim 34, wherein said compound is bicyclovetivenol.

1 45. A composition as in Claim 34, wherein said compound is α -cedrene.

1 46. A composition as in Claim 34, additionally comprising treating the substrate material with
2 a one or more additional, different compounds selected from the group consisting of nootkatone, α -
3 cedrene, zizanol and bicyclovetivenol.

1 47. A topical composition for application to the skin or fur of a mammal for protection against
2 ticks, said composition comprising an effective amount of a compound selected from the group
3 consisting of nootkatone, α -cedrene, zizanol, and bicyclovetivenol, and a pharmaceutically accepted
4 carrier, wherein said composition when applied topically repels or kills ticks substantially more than
5 does an otherwise identical composition that lacks the compound.

1 48. A composition as in Claim 47, wherein said compound is nootkatone.

1 49. A composition as in Claim 48, wherein the concentration of nootkatone in said composition
2 is between about 10 $\mu\text{g/g}$ and about 1000 $\mu\text{g/g}$.

50. A composition as in Claim 48, wherein the concentration of nootkatone in said composition
is between about 10 $\mu\text{g/g}$ and about 200 $\mu\text{g/g}$.

51. A composition as in Claim 47, wherein said compound is zizanol.

1 52. A composition as in Claim 47, wherein said compound is bicyclovetivenol.

1 53. A composition as in Claim 47, wherein said compound is α -cedrene.

1 54. A composition as in Claim 47, additionally comprising a composition with a one or more
2 additional, different compounds selected from the group consisting of nootkatone, α -cedrene, zizanol
3 and bicyclovetivenol.



1 55. A method for protecting a material from cockroach infestation, comprising treating the
2 material with an effective amount of a compound selected from the group consisting of nootkatone,
3 α -cedrene, zizanol, and bicyclovetivenol, wherein the treated material repels cockraches substantially
4 more than does an otherwise identical material that has not been treated with the compound.

56. A method as in Claim 55, wherein the material is selected from the group consisting of soil,
synthetic polymers, diatomaceous earth, sand, and cellulose-containing materials.

57. A method as in Claim 55, wherein the compound is nootkatone.

58. A method as in Claim 55, wherein the compound is α -cedrene.

59. A method as in Claim 55, wherein the compound is zizanol.

1 60. A method as in Claim 55, wherein the compound is bicyclovetivenol.

1 61. A method as in Claim 55, additionally comprising treating the material with one or more
2 additional, different compounds—selected from the group consisting of nootkatone, α -cedrene,
3 zizanol, and bicyclovetivenol.

62. ✓ A protective barrier against cockroach infestation, said barrier comprising an effective
amount of a compound selected from the group consisting of nootkatone, α -cedrene, zizanol, and
bicyclovetivenol, and a substrate, wherein said barrier repels cockroaches substantially more than
does an otherwise identical barrier that has not been treated with said compound.

63. A composition as in Claim 62, wherein said substrate comprises a mulch.

1 64. A composition as in Claim 63, wherein said mulch comprises dried vetiver grass.

1 65. A composition as in Claim 63, wherein said mulch comprises cellulose-containing material.

1 66. A composition as in Claim 62, wherein said substrate comprises soil.

1 67. A composition as in Claim 62, wherein said substrate comprises diatomaceous earth.

1 68. A composition as in Claim 62, wherein said compound is nootkatone.

69. A composition as in Claim 68, wherein the concentration of nootkatone in said barrier is between about 10 $\mu\text{g/g}$ and about 1000 $\mu\text{g/g}$.

1 70. A composition as in Claim 68, wherein the concentration of nootkatone in said barrier is
2 between about 10 $\mu\text{g/g}$ and about 200 $\mu\text{g/g}$.

1 71. A composition as in Claim 62, wherein said compound is zizanol.

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1 72. A composition as in Claim 62, wherein said compound is bicyclovetivenol.

1 73. A composition as in Claim 62, wherein said compound is α -cedrene.

1 74. A composition as in Claim 62, additionally comprising treating the substrate material with a one or more additional, different compounds selected from the group consisting of nootkatone, α -cedrene, zizanol and bicyclovetivenol.

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